

BLUE EARTH COUNTY HIGHWAY DEPARTMENT

CONSTRUCTION PLAN FOR BITUMINOUS
OVERLAY & AGGR. SHOULDER

COUNTY STATE AID HIGHWAY NO.86



END S.A.P. 07-686-01

STA 25+00

BEGIN S.A.P. 07-686-01

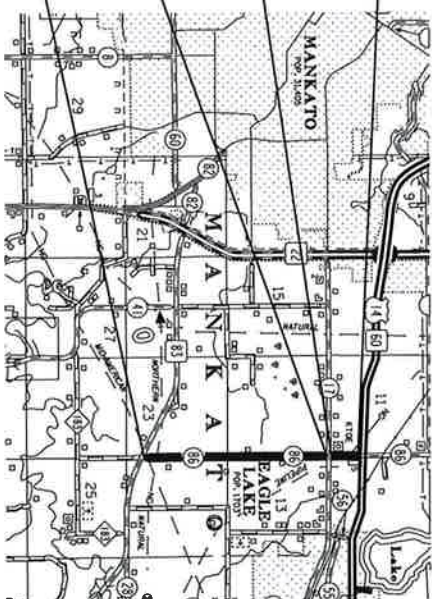
STA 10+00

END S.A.P. 07-686-01

STA 105+61

BEGIN S.A.P. 07-686-01

STA 7+73



T 108 N

R 26 W

DESIGN DESIGNATION

ADT (Current Year) 2766 2012
ADT (Future Year) 4151 2032
ADT (Heavy Commercial)
ESAL 409,000
10 TON DESIGN
R-VALUE 10
DESIGN SPEED 55 MPH
DESIGN SPEED NOT ACHIEVED AT:
SOIL FACTOR 130
SHOULDER WIDTH 5-7'
STOPPING SIGHT DISTANCE BASED ON
3.5' HEIGHT OF EYE
0.5' HEIGHT OF OBJECT

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT
OF TRANSPORTATION'S "STANDARD SPECIFICATIONS
FOR CONSTRUCTION" SHALL GOVERN.

PLAN NOT TO SCALE

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE
COMPLIED WITH, IN THE CONSTRUCTION OF THIS PROJECT.
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED
BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

ALAN FORSBERG
COUNTY ENGINEER

DATE 03/12/12 L.I.C. NO. 14720

DATE 03/12/12

DATE 3/12/2012

S.A.P. 07-686-01 SHEET NO. 1 OF 9 SHEETS

ESTIMATED QUANTITY

ITEM NO.	ITEM	UNIT	CSAH # 86	NON PART.	TOTAL
(1)	2118.501 AGGREGATE SURFACING, CL-2	TON	56	0	56
(1)	2221.501 AGGREGATE SHOULDERING, CL-1 (M)	TON	1100	0	1100
(1)	2232.603 MILLED WET EDGE STRIPE - CONTINUOUS	LIN FT	22576	0	22576
(1)	2357.502 BITUMINOUS MATERIAL FOR TACK COAT	GAL	1809	0	1809
(1)	2360.609 BITUMINOUS MATERIAL FOR MIXTURE (PG 58-28)	TON	273	0	273
(1)	2360.609 BITUMINOUS AGGREGATE (CLASS "A" COARSE)	TON	1549	0	1549
(1)	2360.609 BITUMINOUS AGGREGATE (CLASS "A" FINE)	TON	1328	0	1328
(1)	2360.609 BITUMINOUS AGGREGATE (GRAVEL INTERMEDIATE)	TON	1107	0	1107
(1)	2360.609 BITUMINOUS AGGREGATE (GRAVEL FINE)	TON	443	0	443
(1)	2360.609 BITUMINOUS (PRODUCE, HAUL, & LAY)	TON	4700	0	4700
(3)	2580.501 TEMPORARY LANE MARKING	LIN FT	903	0	903

(1) BASIS OF PAYMENT SPECIFIED IN SPEC. 1903 SHALL BE MODIFIED TO PRECLUDE ANY PRICE ADJUSTMENT FOR INCREASED OR DECREASED QUANTITIES.
 (3) PLACED ON EVERY LIFT, REMOVED BEFORE NEXT LIFT AND PRIOR TO STRIPING.

CERT. BY Alan Forsberg LIC. NO. 14720 MAR. 10, 2012 S.A.P. 07-686-01 SHEET NO. 2 OF 9 SHEETS

PROFESSIONAL ENGINEER

BASIS FOR PLANNED QUANTITIES

AGGREGATE SHOULDERING, & SURFACING

COMPACTED DRY DENSITY - 140 LBS. PER CU. FT.

BITUMINOUS SURFACE

BITUM. MAT'L FOR TACK COAT 0.05 GALS. PER SQ. YD.

BITUM. MAT'L FOR WEAR COURSE AC (PG 58-28) 5.8% BY WEIGHT

BITUM. COURSES, 110 LBS. PER 1" / SQ. YD.

AGGREGATE PROPORTIONS : 35% CLASS "A" COARSE

30% CLASS "A" FINE

25% GRAVEL INTERMEDIATE

10% GRAVEL FINE

THE FOLLOWING STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY

STANDARD PLATES	
PLATE NO.	DESCRIPTION
80001	STANDARD BARRICADES

CERT. BY

Alan Bowling
PROFESSIONAL ENGINEER

LIC. NO. 14720 MAR. 10, 2012

S.A.P. 07-686-01

SHEET NO. 3 OF 9 SHEETS

SHLD. & SURF. QUANTITIES
ROAD # CSAH 86
PROJECT # SAP 07-686-01

LOCATION	LENGTH FEET	AVER WIDTH FEET	DEPTH INCHES	AGGR. SHLD. TON	AGGR. SURF. TON
SHOULDER CL-1M					
STA 7 + 73 TO STA 105 + 61 RT	9788	3	2.5	430	
STA 10 + 0 TO STA 25 + 0 RT	1500	3	2.5	70	
STA 7 + 73 TO STA 105 + 61 LT	9788	3	2.5	430	
STA 10 + 0 TO STA 25 + 0 LT	1500	3	2.5	70	
EXTRA FOR FIELD ENTRANCES				100	
AGGR. SURFACING CL-2					
8 DRIVEWAYS @ 7 TONS					56
TOTAL				1100	56

P:\BTLTUM\12bitum\CSAH 86\86 AGGR.XSLA

SHOULDERING & SURFACING QUANTITIES

CERTIFIED BY

Alan Forsberg

LIC. NO. 14720 MAR. 10, 2012

CSAH 86 SAP 07-686-01 SHEET 4 OF 9 SHEETS

CSAH 86 SUPERPAVE BITUM. CALCULATIONS									
LOCATION			AVR	DEPTH	WEAR	BINDER	BITUM	TACK	
BITUM. WEAR			LENGTH FEET	FEET	INCHES	TON	TON	MAAT'L TON	COAT GAL
STA	7 + 73	TO STA	105 + 61	24	2	2871		166.5	1305
Notching RT	STA	7 + 73	TO STA	2	4	479		27.8	109
Notching LT	STA	7 + 73	TO STA	2	4	479		27.8	109
STA	10 + 0	TO STA	25 + 0	32	2	587		34	267
4 INTERSECTIONS @			30 TONS			120		7	
8 DRIVEWAYS @			15 TONS			120		7	
8 MAILBOX PADS @			175 LENGTH	2.5	2	43		2.5	19
TOTAL			1400	2.5	2	4700	0	273	1809

P:BITUM12bitumCSAH 86(96 SUPERPAVE)A

WET EDGE STRIPE

STATION TO STATION	LOC.	LIN. FT.
TH 83 TO CSAH 17		
7 + 73 TO 105 + 61	RT	9,788
7 + 73 TO 105 + 61	LT	9,788
CSAH 17 TO TH 14		
10 + 0 TO 25 + 0	RT	1,500
10 + 0 TO 25 + 0	LT	1,500
TOTAL		22,576

P:BITUM12bitumCSAH 86(96 SUPERPAVE)A

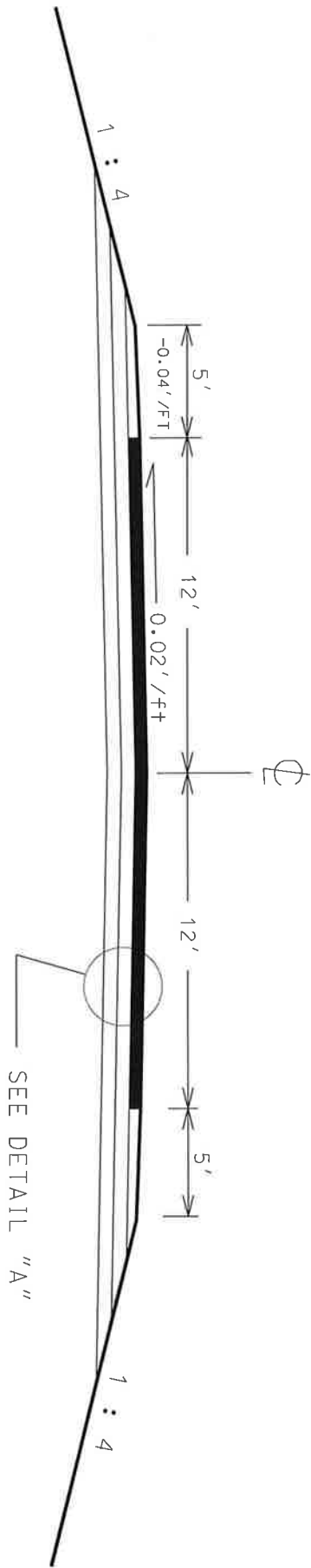
CSAH 86 SUPERPAVE BITUM. QUANTITIES									
MIX TONS	BITUM MAT'L 5.8% TON	TOTAL AGGR. TONS	BITUM CL. "A" COARSE 35% TON	BITUM CL. "A" FINE 30% TON	GRAVEL INTERM. 25% TON	GRAVEL FINE 10% TON	PRODUCE HAUL LAY		
WEAR	4,700	273	4,427	1,549	1,328	1,107	443	4,700	
TOTAL			1,549	1,328	1,107	443	4,700		

SUPERPAVE & MILLING QUANTITIES

CERTIFIED BY Alan Forsberg LIC. NO. 14720 MAR. 10, 2012 S.A.P. 07-686-01 SHEET No. 5 OF 9 SHEETS

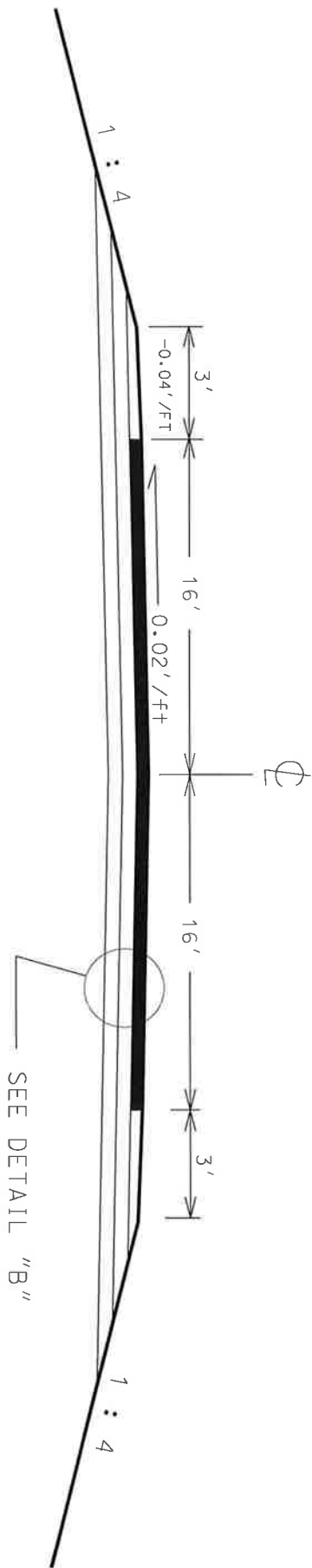
TYPICAL SECTION

STA 7 + 73 TO STA 105 + 61 (T.H. 83 TO CSAH 17)

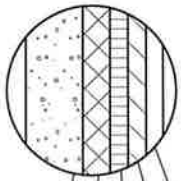


TYPICAL SECTION

STA 10 + 00 TO STA 25 + 00 (CSAH 17 TO T.H. 14)

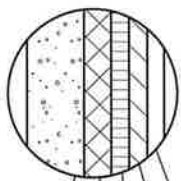


DETAIL "A"



- 2" SP WEARING COURSE MIXTURE (2360)
- INPLACE 2" WEARING COURSE MIXTURE (2331)
- INPLACE 2" WEARING COURSE MIXTURE (2341)
- INPLACE 4" BINDER COURSE MIXTURE (2331)
- INPLACE 12" AGGR. BASE CL-5 (2211)

DETAIL "B"



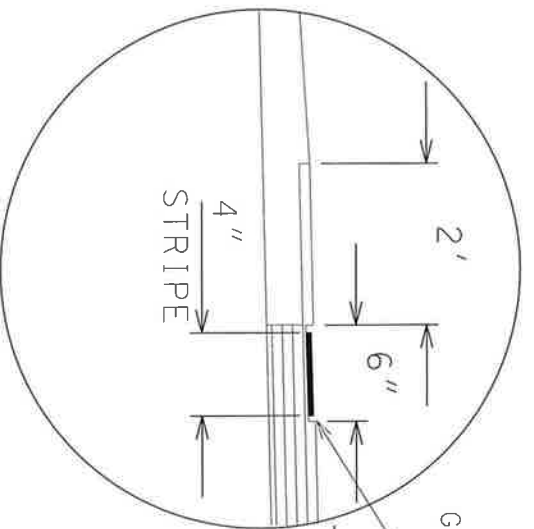
- 2" SP WEARING COURSE MIXTURE (2360)
- INPLACE 2" WEARING COURSE MIXTURE (2331)
- INPLACE 1.5" WEARING COURSE MIXTURE (2331)
- INPLACE 2" BINDER COURSE MIXTURE (2331)
- INPLACE 12" AGGR. BASE CL-5 (2211)

STA 7 + 73 TO STA 105 + 61 (T.H. 83 TO CSAH 17)



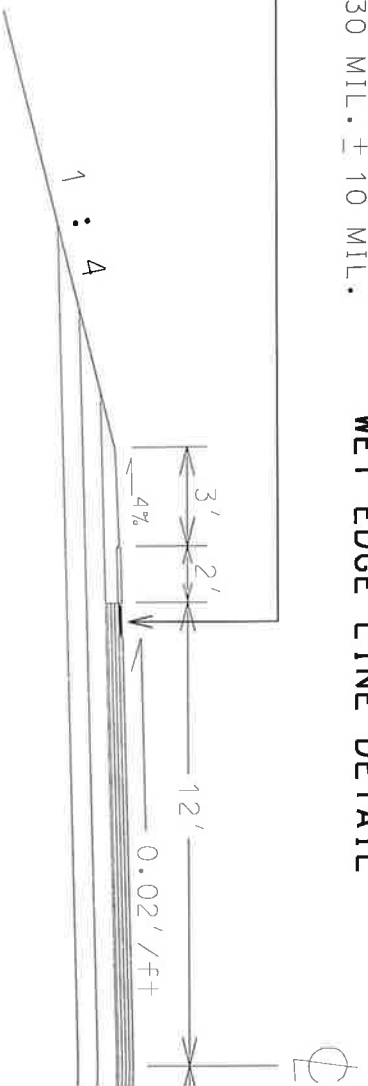
Diagram illustrating the cross-section of a 4" SP wearing course mixture (2360). The diagram shows a circular cross-section of the road surface. A horizontal line indicates the 4" SP wearing course mixture (2360). A vertical line indicates the 2" notching area. A horizontal line below the wearing course indicates the shoulder material CL-1(M).

INSET A RT & LT SIDES



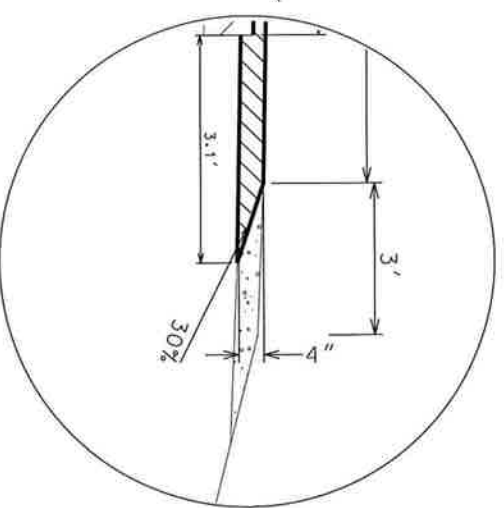
GROOVE DEPTH SHALL BE
30 MIL. ± 10 MIL.

WET EDGE LINE DETAIL

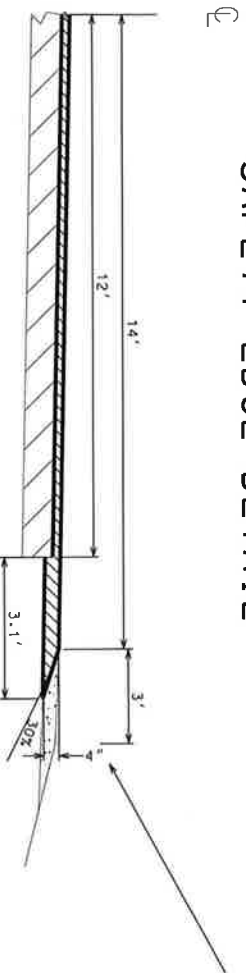


INSET B

RT & LT SIDES

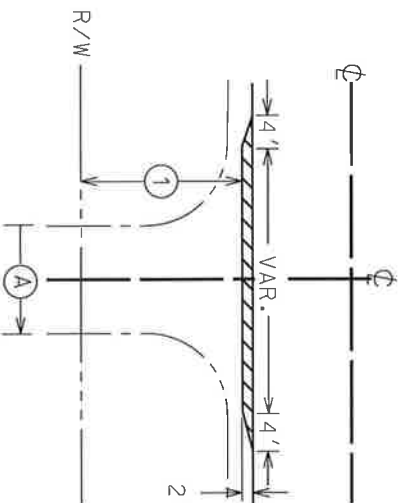


SAFETY EDGE DETAIL



BITUMINOUS APPROACHES AND ENTRANCES DETAIL

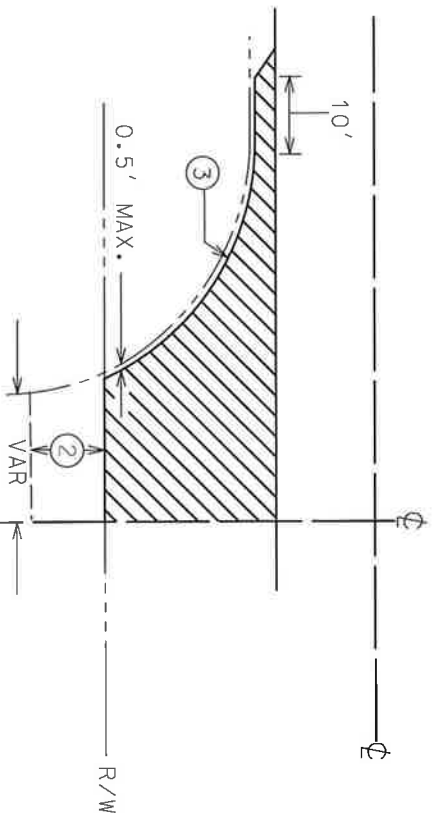
FIELD ENTRANCE



- (A) 20' FOR SINGLE F.E.
28' FOR DOUBLE F.E.

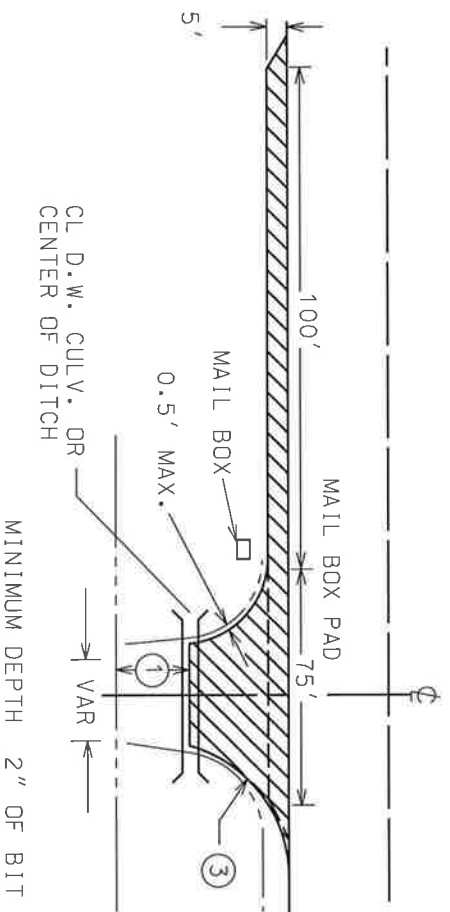
MINIMUM DEPTH 2" OF BIT

ROAD APPROACH



MINIMUM DEPTH 2" OF BIT

FARM & OTHER ENTRANCES



- (1) FINISH WITH AGGR. MATERIAL FROM EDGE OF BITUM. TO A MIN OF 10'.
- (2) FINISH WITH AGGR. MATERIAL, MIN. OF 10'.
- (3) BITUM. RADIUS TO BE STAKED IN FIELD BY THE ENGINEER - 25' MIN. (FOR FARM D.W. CONSIDER 30' TO 40' MAX.)

CONTRACTOR WILL BE REQUIRED TO SHAPE & NOTCH ALL DRIVEWAYS, INTERSECTIONS, MAIL BOX PADS & SHOULDER NOTCHING THAT ARE NOT ALREADY PAVED AS DIRECTED BY THE ENGINEER. WORK SHALL BE DONE INCIDENTAL TO THE WEAR.

CONTRACTOR WILL BE REQUIRED TO HAND FINISH SHOULDERS ON ALL APPROACHES AND ENTRANCES AS DIRECTED BY THE ENGINEER.

CERT. BY Alan Forberg LIC. NO. 14720 MAR. 10, 2012

S.A.P. 07-686-01

SHEET NO. 9 OF 9 SHEETS